



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

Refer to:
OSB2001-0162-FEC

March 4, 2002

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Regulatory Branch, CENWP-CO-GP
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Bernert Gravel Removal Project, Willamette River in Clackamas, Marion and Yamhill Counties, Oregon (Corps No. 1996-01626)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Bernert Gravel Removal Project, Willamette River in Clackamas, Marion and Yamhill Counties, Oregon. In this Opinion, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and Upper Willamette River (UWR) steelhead (*O. mykiss*) or adversely modify their designated critical habitats. As required by section 7 of the ESA, NMFS has included reasonable and prudent measures with non-discretionary terms and conditions that are necessary to minimize the impact of incidental take associated with this action.

This Opinion also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

Questions regarding this letter should be directed to Jim Turner of my staff in the Oregon Habitat Branch at 503.231.6894.

Sincerely,

Michael R. Crouse

D. Robert Lohn
Regional Administrator



cc: Willa Nehlsen - USFWS
Jim Grimes - ODFW
Tim Murphy - DSL
Tom Melville - DEQ
Yvonne Vallette - EPA
Tom Bernert - Joe Bernert, Inc.
Rich Angstrom - OCAPA

Endangered Species Act - Section 7
Consultation
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

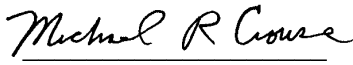
Biological Opinion

Bernert Gravel Removal

Agency: U.S. Army Corps of Engineers

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: March 4, 2002

Issued by: 
D. Robert Lohn
Regional Administrator

Refer to: OSB2001-0162-FEC

TABLE OF CONTENTS

1. ENDANGERED SPECIES ACT	<u>1</u>
1.1 Background	<u>1</u>
1.2 Proposed Action	<u>2</u>
1.3 Biological Information and Critical Habitat	<u>3</u>
1.4 Evaluating Proposed Action	<u>4</u>
1.4.1 Biological Requirement	<u>4</u>
1.4.2 Environmental Baseline	<u>5</u>
1.5 Analysis of Effects	<u>6</u>
1.5.1 Effects of Proposed Actions	<u>6</u>
1.5.2 Effects on Critical Habitat	<u>9</u>
1.5.3 Cumulative Effects	<u>9</u>
1.6 Conclusion	<u>9</u>
1.7 Reinitiation of Consultation	<u>10</u>
2. INCIDENTAL TAKE STATEMENT	<u>10</u>
2.1 Amount or Extent of the Take	<u>11</u>
2.2 Reasonable and Prudent Measures	<u>11</u>
2.3 Terms and Conditions	<u>12</u>
3. MAGNUSON-STEVENSON ACT	<u>12</u>
3.2 Magnuson-Stevens Fishery Conservation and Management Act	<u>13</u>
3.3 Identification of EFH	<u>13</u>
3.4 Proposed Actions	<u>14</u>
3.5 Effects of Proposed Action	<u>14</u>
3.6 Conclusion	<u>14</u>
3.7 EFH Conservation Recommendations	<u>14</u>
3.8 Statutory Response Requirement	<u>14</u>
3.9 Consultation Renewal	<u>15</u>
4. LITERATURE CITED	<u>15</u>

1. ENDANGERED SPECIES ACT

1.1 Background

On July 26, 2001, the National Marine Fisheries Service (NMFS) received a request from the U.S. Army Corps of Engineers (COE) for Endangered Species Act (ESA) section 7 consultation for the one year extension of the Bernert Gravel Removal Permit for commercial gravel mining in the Willamette River, Clackamas, Marion and Yamhill Counties, Oregon. In the July 25, 2001 letter, the COE determined that the Upper Willamette River (UWR) chinook salmon (*Oncorhynchus tshawytscha*) and Upper Willamette River (UWR) steelhead (*O. mykiss*) may occur within the project area and that these species may be affected by the proposed project. Because the proposed action would result in the substantial removal of sand and gravel from this section of the river and likely affect functional conditions that support these listed fish species the COE determined that the proposed action may adversely affect these species or their designated critical habitats and requested formal consultation.

NMFS had been involved in discussions with the COE and applicant prior to this request for consultation. The applicant has been mining gravel from the Willamette River for approximately 40 years. This operation has been modified over the years to accommodate concerns regarding impacts to fish and wildlife. The discussions have only recently reflected concerns over ESA-listed fish species and the consultation process. NMFS provided general guidance regarding section 7 consultation and information that would be necessary for completing consultation. The initial focus of the discussions concerned the application for a multi-year permit for gravel mining. After it was determined that the amount of available information and time for assessing effects on listed fish was limited, the applicant and COE decided to narrow the scope of the action to a one-year extension of the existing permit. The multi-year permit application would continue to be processed. The COE initiated two separate requests for consultation, one for the one-year permit extension of the current permit, and a second request for the multi-year permit renewal. This biological opinion (Opinion) pertains to the one-year extension of the current permit as modified and described below.

NMFS acknowledged the receipt of the COE consultation request in an October 25, 2001 letter. Although information had been provided on the quantity of gravel removed from each site over time and consideration of the effects of the gravel operation on listed fish species, there was very little information on the gravel transport and effects on stream morphology. NMFS expressed the need for site-specific information on current conditions for each of the proposed gravel extraction sites, and a more detailed analysis of effects on indicated listed fish species. A response was hand-delivered to NMFS by hand on January 2, 2002 as a draft report prepared by the applicant. This report provided the requested information for 24 sites within the section of the river previously mined by the applicant. This report acknowledged that precise information and data are currently not available to develop reference conditions against which the effects of the proposed action and gravel recruitment rates could be compared.

A number of meetings were held with the COE and the applicant. The point of the meetings was

to determine particular gravel mining sites and quantities of gravel that could meet the applicant needs, yet would not result in substantial adverse affects to the indicated listed fish species. These discussions concluded with a meeting on February 11, 2002, that defined the final extent and nature of the sand and gravel to be removed under the one-year permit extension.

The objective of this Opinion is to determine whether the action to mine gravel for one year at the identified sites and rates is likely to jeopardize the continued existence of UWR chinook salmon and UWR steelhead or their designated critical habitats.

1.2 Proposed Action

The COE proposes to authorize an additional year of operation for the Bernert Gravel Removal Project, Willamette River in Clackamas, Marion and Yamhill Counties, Oregon. The proposed action is intended to obtain gravel for commercial purposes. The proposed action is needed to maintain the viability of the applicant and provide aggregate for production of concrete.

The COE has proposed to authorize the one time removal of 110,000 cubic yards of sand and gravel from three locations within the section of the Willamette River between river miles (RM) 27-56. These include mining of 50,000 cubic yards of gravel at Ash Island (RM 52), mining 25,000 cubic yards of gravel and rock at Peach Cove, (RM 35), and mining 35,000 cubic yards of sand and gravel at Caffall Bros. site, RM 31. The amount of gravel extracted from each site is approximately 10% of the total estimated deposit. Each gravel deposit is submerged year round in 12 feet or greater depth of water and the change in depth from gravel removal will be no greater than 4 feet and affect 25% or less of the surface area of the deposit.

The gravel mining operation includes the extraction, transport, and processing of the sand and gravel. Sand and gravel would be extracted from each site using a barge mounted clam shell dredge. The equipment would be moved to the site and anchored by two steel piles extending into the stream bed. The bed material is extracted from stream bed and deposited on a second barge. The transport barge has a capacity of approximately 400 cubic yards. The rate of extraction is approximately 150 yds/hr. At this rate, the proposed operation would require approximately 110 days, or roughly 35 days at Ash Island and 75 days at Peach Cove and Caffall Bros. The work will be conducted at Ash Island in the months of June and July, and at Peach Cove and Caffall Bros. during March and July through September 2002. The sand and gravel is processed at upland facilities where it is washed, sorted, and mixed to be used in the production of concrete. The facility is located in the City of Wilsonville. Fine sediment from the operation will be retained in settling ponds above the 100 year floodplain.

The action area for this proposed project extends beyond the immediate project site. The action area is defined by NMFS regulations (50 CFR 402) as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For this proposed project, the action area includes the stream area 0.5 miles upstream and downstream of each gravel extraction site and the full extent of the stream traveled by the gravel transport barge. The action area for the proposed permit extension is the section of the

Willamette River from RM 30 to 54.

Conservation measures have been proposed including limiting dredging operations to the deepest areas of the river, maintaining buffers adjacent to the stream edge, maintaining fish passage and habitat access, conducting work during ODFW in-water work period, managing mining depths and changing the type of bucket to limit disturbance of fine sediment underlying gravel deposits.

1.3 Biological Information and Critical Habitat

The proposed project and action area is within the range of UWR chinook salmon and UWR steelhead or their designated critical habitats. References for species listing status, critical habitat designation and protective regulation can be found in table 1. The UWR chinook salmon and UWR steelhead or their designated critical habitats have been substantially affected by past actions limiting distribution and viability of their populations. The abundance of UWR spring chinook salmon has declined. The short-term trend indicates strong continual decline. The UWR steelhead populations have similarly declined. These populations are more widely distributed in the major tributaries of the eastern basin and have been influenced by hatchery fish.

Habitat loss has contributed to the decline of UWR chinook salmon and UWR steelhead. Essential stream features critical to the survival and recovery of these species are substrate, water quality, water quantity, flow characteristics, instream structure, food, riparian vegetation, and access to habitat.

For the proposed action, NMFS is concerned with the low abundance and declining populations of the indicated species and potential effects on critical habitat including: Access to spawning habitat, secondary and high water channels, hydrology and flooding patterns, connection to floodplain, vegetated riparian areas, water temperature, turbidity and suspended sediment.

Table 1. References to Federal Register Notices containing additional information concerning listing status, biological information, and critical habitat designations for listed and proposed species considered in this Opinion.

<i>Species (Biological References)</i>	<i>Listing Status (T-Threatened, E-Endangered)</i>	<i>Critical Habitat</i>	<i>Protective Regulations</i>
UWR chinook salmon (Myers et. al. 1998)	March 24, 1999, 64 FR 14308 (T)	February 16, 2000, 65 FR 7764	July 10, 2000, 65 FR 42422
UWR steelhead (Busby et. al. 1995, Busby et. al. 1996)	March 25, 1999, 64 FR 14517 (T)	February 5, 1999, 64 FR 5740	July 10, 2000, 65 FR 42422

1.4 Evaluating Proposed Action

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of: (1) Defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NMFS identifies those effects of the action that impair the function of any essential feature of critical habitat. NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

1.4.1 Biological Requirement

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the subject species to survive and recover to a naturally reproducing population level at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to

become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the indicated fish species, based upon their risk of extinction, has not significantly improved since the species were listed.

1.4.2 Environmental Baseline

The baseline conditions reflect past and ongoing activities that have affected UWR chinook salmon and UWR steelhead or their designated critical habitat. The proposed action area, as defined above, is less than the complete range of the listed species and designated critical habitat. The current status of UWR chinook salmon and UWR steelhead or their designated critical habitat is consistent with that described for species throughout the range (Table 1).

Within the proposed action area, the falls at Oregon City (RM 26.5) is a substantial feature in the lower reach of the Willamette River and exerts significant control on the stream character. The falls have affected stream gradient and sediment transport capabilities. Although lower gradient streams tend to be predominated by fine sediments, there is sufficient energy and local source of gravel to sustain regular gravel removal as demonstrated by dredging records. A single channel dominates the lower portion of this stream section with variations in depth and some limited gravel bar features. Three major tributaries, the Tualatin River (RM 28.5), the Mollala River (RM 35.5), and Yamhill River (RM 55) enter the Willamette River in this action area. The Tualatin and Yamhill Rivers provide substantial input of fine sediment. The Mollala River contributes gravel to the Willamette. Other sources of gravel within this section of the Willamette River are in-channel deposits upstream of RM 56 and erosion of the stream banks.

The baseline conditions in the action area have been affected by agricultural and forest practices, flood control, and urbanization. Within the proposed action area, the land use is predominantly agriculture, with some rural residential and urban areas. This has resulted in current conditions within the proposed action area that include loss of complex instream habitat structure; degradation of water quality including increased temperature, turbidity, and suspended sediment; modification of hydrology resulting in shifting of distribution, magnitude, and duration of floods; channelization of the stream bed; hardening of the stream banks; removal of large woody debris; loss of floodplain; loss of riparian forests and wetlands (Hulse 1998, US Army Corps of Engineers 2000). Current habitat conditions include: Simple stream channel, limited flooding regime, narrow and limited floodplains, narrow vegetated riparian areas, few complex woody debris structures, restricted and relatively few secondary and high water channels, and few gravel bar/island features. Water quality is poor with relatively high concentration of nutrients, toxic pollutants, and temperature (USGS 1998). Flow conditions, including flooding parameters, are managed by the upstream dams. The stream channel has been constrained by various lengths of revetments and bank stabilization projects reducing the tendency for stream migration and limiting supply of in-stream gravel. The surrounding watershed contains substantial drainage modifications including agricultural ditches and field drainage systems, loss of wetlands,

compaction of soil, hard impervious surfaces from roads, and structures that increase surface water discharge and decrease water quality.

Based on the best available information regarding the current status of UWR chinook salmon and UWR steelhead range-wide; the population status, trends, and genetics; and the poor environmental baseline conditions within the action area; NMFS concludes that the biological requirements of UWR chinook salmon and UWR steelhead within the action area are not currently being met. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of UWR chinook salmon and UWR steelhead

1.5 Analysis of Effects

The effects determination in this Opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The effects of actions are based on the concept of properly functioning conditions (PFC) and are expressed in terms of the expected effect – restore, maintain, or degrade – on aquatic habitat factors in the project area.

1.5.1 Effects of Proposed Actions

Instream gravel operations can have direct and indirect effects on listed salmonids. Direct effects may include degraded water quality, elimination of spawning or rearing habitat, reduced food productivity, restricting fish passage, or increasing potential fish entrapment. Indirect effects may include extended stream bed and bank erosion resulting in loss of riparian habitat, simplification of channel features, down cutting of streambed, and loss of floodplain connection. These effects can vary in significance and persist over time and space. These effects are generally well-described in the provided assessment and in a number of documents and papers (OWRRI 1995, Kandolf 2001, Spence 1996). The immediate operational impacts and effects from mining, such as turbidity increases tend to be ephemeral, localized, and manageable by conditioning procedures. The impacts and effects to the stream channel tend to be more persistent and less defined or manageable and complex. These more complex channel effects are of greatest concern to NMFS.

The direct effects from the proposed action are relative to those dredging activities that occur when the indicated listed fish species are present. Adult and juvenile UWR chinook and UWR steelhead occur in the action area during specific times of the year. Adults migrate upstream through the action area in March through May. Juveniles outmigrate and rear in the action area in March through May and from October through December. There is no spawning within the action area. The dredging operations are conducted during the summer and winter time periods of June through September and December through March. The indicated listed fish species are less likely to be present during the time frames that the dredging activities would occur.

The direct effects of the proposed action are relative to the spatial extent of the impacts from the dredging operation and the likelihood that the indicated listed fish species would encounter the operation. The physical extent of the dredging activities are limited at any one time to the area defined by two full size barges, approximately 150 x 40 feet, and the associated turbidity plume that may extend down stream a few hundred feet. Given a channel width of 500 feet, the immediate area of disturbance is about 10% of the channel width. The activities occur in water 12 feet or deeper and is at least 100 feet from the shoreline. The use of clam shell dredging, targeting of coarse materials, and barging and processing of the gravel and sand at an upland location can limit the extent and duration of suspended sediment and turbidity increases. In general adults move upstream avoiding area of high velocity or high turbidity. Juveniles will tend to follow shallower edges of the stream and utilize natural riparian areas where there may be food and cover. Given the limited impact of the immediate operation at any one time and avoidance of preferred migratory and rearing habitat, the indicated listed fish species are less likely to encounter the dredging operation.

The effects of the proposed action on stream processes and function that support listed fish are more complex and less manageable. The resulting modification to the stream channel can affect stream hydraulics, sediment transport, erosion and depositional patterns, channel form, and interrelationship of stream riparian area and floodplain. These effects may not be directly observable in the short term and require more extensive evaluation of changes to stream features over time.

NMFS considers the effects of the proposed action in the long term based on the extent to which the proposed action modifies or impairs properly functioning habitat conditions (PFC). To better analyze these effects, reference conditions or criteria based on PFC need to be established. Precise reference conditions or criteria of PFC for this section of the Willamette River are lacking. There are some indications that in the past, the Willamette River was more substantially connected to flood plains, and that the floodplain and riparian areas were more extensive. Although this reach of the Willamette River can be characterized as a single channel stream, secondary channels, stream migration and the active forming and reforming of gravel islands and channel complexes are suggested. In general, the stream bed may have degraded at various different locations within lower reaches of the Willamette River, and secondary channels and channel forming processes may have been restricted as a result of flood control and bank stabilization (US Army Corps of Engineers 2000). PFC for this section of the Willamette would include more extensive and frequent floods, a greater interaction with floodplains, greater diversity of stream bed form, more extensive and higher number of gravel bar deposits, and greater number of secondary channels and large wood accumulation.

Absent specific reference conditions or criteria for PFC as a whole, a more limited consideration of specific factors that are related to PFC may be useful. Gravel recruitment is one measurable parameter that may be associated with PFC. Evaluated as a whole or site-by-site, gravel recruitment can be used to set an upper limit on gravel removed from the system and also help establish appropriate gravel removal targets. This will be most useful where a link between stream flows, bedload transport, gravel sources, and resulting streambed forms can be

established. As a general understanding, where gravel removal exceeds gravel input through recruitment, stream channel degradation or destabilization is likely. This would represent a theoretical maximum amount of gravel dredging before substantial alteration of streambed and bank would be evident. Yet, for the purposes of representing PFC, the actual amount of gravel removed from the system should be substantially less than the theoretical maximum to take into account variation in gravel source, bedload transport capabilities and potential depositional patterns over time. Where gravel removal exceeds replenishment, physical and biological processes can be disrupted and not adequately support the listed fish species.

In addition to assessing gravel recruitment, using natural patterns of disturbance under natural stream processes would help establish dredging parameters consistent with PFC. Based on substantial variation in flow regimes, sediment characteristics, and channel forms, the actual gravel deposits and bed features will vary over time and space. Gravel may be stored in one deposit over a long period before circumstances mobilize and redistribute gravel. In addition, when this occurs, the extent of the disturbance will vary. Extracting more gravel during a high flow and recruitment period may be inconsistent with PFC and instream storage and supply. Annual recurrence of gravel extraction may also be inconsistent with PFC. Using flow parameters as an indication of the variability of gravel transport potential with site-specific data collection may help establish the bedload transport quantities, the recurrence interval for a particular site, and a natural disturbance pattern most consistent with PFC.

Comparing the proposed action with estimated gravel recruitment can be used to evaluate effects on PFC. Based on the study at Mission Bar (Ogden Beamen 1989), the general transport model applied to the San Salvador site as described in the provided information, and the average gravel extracted over the past 40 years from this section of the Willamette River, gravel recruitment for the Willamette River in the action area is likely to be 100,000 to 300,000 cubic yards. The proposed action to mine a total of 110,000 cubic yards of gravel would be less than the average sustained extraction for this area over the last 40 years and consistent with our estimate for recruitment. If the same analytical approach is used to look at each specific site, the proposed action would include mining of 35,000 cubic yards at Ash Island (compared to the 20,000 to 40,000 cubic yards apparent recruitment), mining 50,000 cubic yards at Peach Cove (compared to 18,000 to 36,000 cubic yards apparent recruitment), and 25,000 cubic yards at Caffall Bros. 25,000 (compared to 10,000 to 20,000 cubic yards apparent recruitment). Because of the lack of more specific data or information, particularly at the site scale, a more precise evaluation cannot be made. However, based on the best information that is currently available, proposed mining volumes appear to be near expected gravel recruitment rates.

The overall effects from the proposed action for one year of mining would not be expected to further impair PFC. In the short term, gravel extracted from each site may exceed the amount of gravel redeposited within the next year. In the long term, where gravel removal and disturbance from mining are limited and consistent with PFC, gravel deposits would be replenished and physical and biological processes that support the indicated listed fish would be maintained.

The negative effects of these activities on UWR chinook salmon and UWR steelhead or their designated critical habitats will be avoided or minimized by carrying out construction methods and approaches included in the project design, and in the conservation measures. These include: Conducting work during periods of time when listed fish are not likely to be present or less vulnerable to the impacts from the operation, establishing depth and width limits at each dredge sites to lessen potential effects to riparian habitat and secondary channels, maintaining a substantial distance between each dredge site to minimize the potential for upstream and downstream cumulative erosion effects, and managing operations by modifying equipment to reduce the amount of fine sediments disturbed and resuspended.

1.5.2 Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat has been designated for the indicated fish species. The proposed action effects to critical habitat include modification of stream bed, increased turbidity and suspended sediment, and substrate transport and character as described above.

1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the general action area is the applicant's property. Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. NMFS is not aware of any significant change in non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

1.6 Conclusion

In general, the baseline conditions necessary to support listed fish species within the Willamette River Basin are considered poor. The listed populations of UWR steelhead and chinook salmon are both considered in poor condition as described in listing documents. The effects of the action have been minimized by applying conservation measures consistent with NMFS policy including timing restriction, limiting the extent of the operation at each site, and distributing the dredging actions over time and space.

After reviewing the current status of UWR chinook salmon and UWR steelhead, the environmental baseline for the action area, the effects of the proposed Bernert Gravel Removal Project and the cumulative effects, it is NMFS' opinion that this project, as proposed, is not

likely to jeopardize the continued existence of the UWR chinook salmon and UWR steelhead, and is not likely to destroy or adversely modify designated critical habitat. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it would cause short-term effects, including localized increase in suspended sediment and modification of gravel transport regime, and stream bed configuration. In the long term, the effects will not impair the reestablishment of gravel deposits and channel characteristics that support the indicated listed fish species. This conclusion is based on findings that the proposed action will minimize death or injury to UWR chinook salmon and UWR steelhead by maintaining channel character and flooding processes, maintaining fish passage and habitat access, conducting work during ODFW in-water work period, managing mining depths, and utilizing a clam shell to limit disturbance of fine sediment underlying gravel deposits.

1.7 Reinitiation of Consultation

This concludes formal consultation on the Bernert Gravel Removal Project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending re-initiation of consultation.

2. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1 Amount or Extent of the Take

NMFS anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of the indicated fish species because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during in-water work (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species themselves. In instances such as these, NMFS designates the expected level of take as "unquantifiable." Based on the information in the BA, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Opinion. The extent of the take is limited to the project action area.

2.2 Reasonable and Prudent Measures

NMFS believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of the above species. The COE shall apply permit conditions that:

1. Minimize the likelihood of incidental take from stream degradation or changes to the state of stream bank erosion by maintaining stream migration and channel forming processes.
2. Minimize the likelihood of incidental take from prohibiting passage and access by maintaining habitat access and passage.
3. Minimize the likelihood of incidental take from in-water work by restricting the timing of in-water work.
4. Minimize the likelihood of incidental take from dredging activities by minimizing turbidity and suspended sediment increases.
5. Ensure the effectiveness of the permit conditions by monitoring the activities to assess the extent of disturbance after the operation and the potential of each site to recruit future gravel deposits.

2.3 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the COE must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1, the COE shall ensure that:
 - a. All operations are set back a minimum of 100 feet from the low water shoreline.
 - b. The change of depth at any one site shall not exceed five feet.

2. To implement reasonable and prudent measure #2, above, COE shall ensure that:
 - a. There is no impairment of passage or entrapment of adult or juvenile fish as a result of channel modifications.
3. To implement reasonable and prudent measure #3, the COE shall ensure that:
 - a. All in-water work shall be conducted during March, and June through September 2002.
4. To implement reasonable and prudent measure #4, the COE shall ensure that:
 - a. Turbidity and suspended sediment increases do not exceed background levels within 200 feet of the dredging activity.
5. To implement reasonable and prudent measure #5, the COE shall ensure that:
 - a. Bathymetric surveys to establish site condition, pre and post activity, including cross sections every 300 feet and one longitudinal section are conducted.
 - b. Reference sites similar in nature and in close proximity to each of the gravel extraction sites be identify and surveyed in the same manner to the gravel extraction sites and used to evaluate gravel recruitment potential.
 - c. A survey be conducted to identify upstream or stream bank gravel sources within the vicinity of the proposed action and assess the potential for these sources to resupply the gravel extraction sites.
 - d. Provide a monitoring report containing the information indicated above shall be provided to NMFS by November 30, 2002.

3. MAGNUSON-STEVENSON ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish

habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species' full life cycle (50 CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH.
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km)(PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years)(PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border.

3.4 Proposed Actions

The proposed actions are detailed in section 1.2 of this Opinion. The action area includes designated critical habitat affected by the proposed action within the Columbia River (RM 105). This area has been designated as EFH for various life stages of chinook and coho salmon.

3.5 Effects of Proposed Action

As described in detail in section 1.5, the proposed activities may result in detrimental short- and long-term adverse effects to certain habitat parameters. Excavation of river bottom material will result in disturbance of the substrate and a temporary increase in turbidity.

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for chinook and coho salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the Corps, all of the Reasonable and Prudent Measures and the Terms and Conditions contained in Sections 2.2 and 2.3 are applicable to EFH. Therefore, NMFS incorporates each of those measures here as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NMFS after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NMFS, the agency must explain its reasons for not following the recommendation.

3.9 Consultation Renewal

The Corps must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Busby, P., S. Grabowski, R. Iwamoto, C. Mahnken, G. Matthews, M. Schiewe, T. Wainwright,

- R. Waples, J. Williams, C. Wingert, and R. Reisenbichler. 1995. Review of the status of steelhead (*Oncorhynchus mykiss*) from Washington, Idaho, Oregon, and California under the U.S. Endangered Species Act. 102 p. plus 3 appendices.
- Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-NWFSC-27, 261p.
- Hulse, David. 1998. Willamette River Basin: A Planning Atlas. The institute for Sustainable Environment. University of Oregon, Eugene, Oregon.
- Kandolf, G. Mathias, Matt Smeltzer, Lisa Kimball. 2001. Freshwater Gravel Mining and Dredging Issues. Prepared for Washington Department of Fish and Wildlife. Center for Environmental Design Research, University of California, Berkeley. December 10, 2001. Berkeley, California.
- Myers, J.M., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-35, 443 p.
- National Marine Fisheries Service (NMFS). 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.
- National Marine Fisheries Service (NMFS). NMFS National Gravel Extraction Policy. [HTTP://swr.ucsd.edu/hcd/gravelsw.htm](http://swr.ucsd.edu/hcd/gravelsw.htm).
- Oregon Water Resource Research Institute (OWRRI). 1995. Gravel Disturbance Impacts on Salmon Habitat and Stream Health. A Report for the Oregon Division of State Lands. April 1995. Oregon State University, Corvallis, Oregon.
- PFMC (Pacific Fishery Management Council), 1998a. Final Environmental Assessment/Regulatory Review for Amendment 11 to the Pacific Coast Groundfish Fishery Management Plan. October 1998.
- PFMC (Pacific Fishery Management Council), 1998b. The Coastal Pelagic Species Fishery Management Plan: Amendment 8. Portland, Oregon.
- PFMC (Pacific Fishery Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and Identification of Essential Fish Habitat,

Adverse Impacts and Recommended Conservation Measures for Salmon. Portland, Oregon.

Spence, B.C., G. A. Lomnický, R. M. Hughes, and R. P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon. Prepared for National Marine Fisheries Service, Portland Oregon.

U.S. Army Corps of Engineers, Portland District. 2000. Biological Assessment of the Effects of the Willamette River Basin Flood Control Project on Species Listed Under the Endangered Species Act. Portland Oregon.

U.S. Geological Survey (USGS). 1998. Water Quality in the Willamette Basin Oregon, 1991-95. U.S Geological Survey Circular 1161. [HTTP://water.usgs.gov/lookup/get?circ1161](http://water.usgs.gov/lookup/get?circ1161).